# Forces, Forms, and Stem Cell Function

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Cells within their tissue context experience many cues within the surrounding microenvironment, including exposure soluble factors, adhesion to extracellular matrix, juxtacrine signals from neighboring cells, and mechanical forces. Although the spatial organization of the local microenvironment plays a key role in defining the presentation of such cues, and thereby directs cell function, we have little understanding of how cells transduce such structural-mechanical signals. We have adapted numerous microengineering approaches to better understand the role of adhesive and mechanical cues in regulating a variety of cellular processes. In particular, we describe our studies on the role of integrin- and cadherin-mediated adhesion, Rho GTPase signaling, and cytoskeletal mechanics in regulating the commitment of mesenchymal stem cells into different lineages.